

### Listing and Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1           1.       (previously amended) A method of performing semi-automatic tracking of  
2 colored objects within a video image sequence comprising the steps of:  
3           separating objects within an initial frame of the video image sequence on the basis of  
4 color;  
5           receiving a user-provided input that selects an object of interest from the separated  
6 objects by a user identifying a centroid of the object of interest; and  
7           tracking the object of interest through successive frames of the video  
8 image sequence using a Kalman predictive algorithm applied to the centroid.

1           2. (original) The method as recited in claim 1 wherein the tracking step comprises the  
2 steps of:  
3           from the initial frame determining a position and velocity for the centroid;  
4           for each successive frame predicting a position of the centroid;  
5           from the predicted position extracting a connected group of blocks that belong to the  
6 object of interest;  
7           measuring the position of the centroid in the successive frame from the connected group  
8 of blocks; and  
9 smoothing the measured position and velocity of the centroid.

1           3. (original) The method as recited in claim 1 further comprising the steps of:  
2           detecting whether the centroid in the successive frame is within the object of interest and  
3 field of view; and  
4           applying an error recovery scheme to re-identify the object of interest in the successive frame.

1           4. (previously amended) A method of tracking a colored object moving relative to a  
2 background within a sequence of video image frames, comprising the steps of:  
3           (a) in an initial frame of the sequence, separating objects from the background based on  
4 color;  
5           (b) selecting a separated object by a user identifying a reference point within a boundary  
6 of the separated object; and

7 (c) tracking the selected object through successive frames of the video image sequence  
8 using a Kalman predictive algorithm applied to the reference point.

1 5. (previously amended) The method according to claim 4, wherein step (c) includes the  
2 steps of determining the position of a centroid of the selected object and applying the Kalman  
3 predictive algorithm to the centroid.

1 6. (previously amended) The method according to claim 4, wherein step (c) includes the  
2 steps of determining the position of a centroid based on a color function of the selected object  
3 and applying the Kalman predictive algorithm to the centroid.

1 7. (previously amended) The method according to claim 4, wherein step (c) includes the  
2 steps of determining the position of a centroid based on luminance of the selected object and  
3 applying the Kalman predictive algorithm to the centroid.

1 8. (previously amended) The method according to claim 4, wherein each image frame is  
2 resolved into multiple blocks and step (a) comprises the step of segmenting the initial frame  
3 based on color of the blocks.

1 9. (previously amended) The method according to claim 8, wherein step (b) includes the  
2 step of identifying a color model to which the selected object belongs and step (c) includes the  
3 steps of:

4 predicting the position of a centroid of the selected object in a subsequent frame;;  
5 determining whether the predicted position of the centroid in said subsequent frame is  
6 within a boundary of the selected object in said subsequent frame;; and

7 in the event that the predicted position of the centroid in said subsequent frame is not  
8 within the boundary of the selected object in said subsequent frame, carrying out a search to  
9 identify a block that belongs to the selected color model.

1 10. (previously amended) The method according to claim 4, wherein each image frame  
2 is resolved into multiple blocks and step (c) comprises the steps of:

3 determining position and velocity of a centroid of the selected object in the initial frame;;  
4 predicting the position of the centroid in a subsequent frame;;  
5 from the predicted position of the centroid in said subsequent frame, extracting a  
6 connected group of blocks in said subsequent frame that belong to the selected object;; and

- 7 calculating the position of the centroid of the selected object in said subsequent frame from the
- 8 connected group of blocks.
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